

**Remarks**

Claims 163, 171, 179, 183 and 193 are amended herein. Upon entry of this amendment, claims 163-210 will be pending.

**Supplemental Information Disclosure Statement**

A Fourth Supplemental Information Disclosure Statement and Notice Pursuant to M.P.E.P § 2001.06(c) is submitted herewith. Applicants respectfully request review and entry of the cited references.

**Disclosure Objections**

Applicants hereby amend the specification to include the current status of all nonprovisional parent applications referenced. As such, Applicants request withdrawal of the objection.

**Amendments to the Specification**

Applicants hereby amend the specification to include consistory paragraphs directed to the amended claims. The addition of such paragraphs does not constitute an addition of new matter.

**Rejection under 35 U.S.C. §102**

**Claim 171**

Reconsideration of the final rejection of claim 171 under 35 U.S.C. §102 as being anticipated by Aldrich in view of Cole-Parmer is respectfully requested.

Claim 171 is amended to further emphasize that each plastic stirrer comprises a shaft **having a plastic core** and a plastic mixing blade on the shaft. This construction clearly distinguishes Applicants' invention as patentable over the prior art of record, including Aldrich and Cole-Parmer.

It will be noted in this regard that Aldrich shows a variety of stir shafts, none of which has a plastic core. For example, pages 2105-2108 of Aldrich show various stirrer shafts made of glass, but Aldrich fails to disclose any shafts having a plastic core. All stir shafts disclosed by

Aldrich have either a steel or glass core. Aldrich fails to disclose any plastic core shafts of any kind. Similarly, Cole-Parmer discloses only plastic-coated mixing assemblies having steel cores. Cole-Parmer provides no disclosure of any shaft having a plastic core. None of the other references of record provides further relevant teaching. Without disclosing each and every element of claim 171, the cited references do not anticipate claim 171.

For these reasons, claim 171 is believed to be in condition for allowance. Claims 172-175, which depend directly or indirectly from claim 171, are submitted as patentable for the same reasons as claim 171.

### Claim 172

Reconsideration of the final rejection of claim 172 under 35 U.S.C. §102 as being anticipated by Aldrich in view of Cole-Parmer is respectfully requested.

Claim 172 discloses a quick-connect/disconnect element comprising **a circumferential groove in the shaft adapted for receiving one or more detents in the coupling**. This construction clearly distinguishes Applicants' invention as patentable over the prior art of record, including Aldrich and Cole-Parmer.

Aldrich discloses a "quick-disconnect chuck design," but fails to provide any details of the design. Moreover, Aldrich fails to disclose a circumferential groove formed in any shaft or a corresponding detent formed in any coupling. Cole-Parmer fails to disclose a quick-connect/disconnect element of any kind, and more specifically fails to disclose a shaft having a groove or a coupling having a detent. None of the other references of record provides further relevant teaching. Without disclosing each and every element of claim 172, the cited references do not anticipate claim 172.

For these reasons, claim 172 is believed to be in condition for allowance. Claim 173, which depends directly from claim 172, is submitted as patentable for the same reasons as claim 172.

### Claim 173

Reconsideration of the final rejection of claim 173 under 35 U.S.C. §102 as being anticipated by Aldrich in view of Cole-Parmer is respectfully requested.

Claim 173 discloses a quick-connect/disconnect element comprising **a pin on the shaft receivable in a bayonet slot in the coupling**. This construction clearly distinguishes

Applicants' invention as patentable over the prior art of record, including Aldrich and Cole-Parmer.

As discussed above, Aldrich discloses a "quick-disconnect chuck design," but fails to provide any details of the design. Moreover, Aldrich fails to disclose a pin on any shaft or a bayonet slot in any coupling. Cole-Parmer fails to disclose a quick-connect/disconnect element of any kind, and more specifically fails to disclose a pin on any shaft or a coupling having a bayonet slot. None of the other references of record provides further relevant teaching. Without disclosing each and every element of claim 173, the cited references do not anticipate claim 173.

For these reasons, claim 173 is believed to be in condition for allowance.

### Rejection under 35 U.S.C. §103

#### **Claim 163**

Reconsideration of the final rejection of claim 163 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich is respectfully requested.

Amended claim 163 defines a parallel reactor having vessels with multi-piece spindles for stirring reaction mixtures in the vessels. Each of the multi-piece spindles comprises (a) a metal upper spindle portion, (b) a **plastic stirrer** comprising a **shaft having a plastic core** and a plastic mixing blade on the shaft, and (c) a coupling for releasably coupling the plastic stirrer to the metal upper spindle portion in a position wherein the stirrer extends down into a respective vessel. Claim 163 also recites that each plastic stirrer is removable from its coupling after a mixing operation to permit replacement of the stirrer.

Nelles and the other references of record fail to disclose these novel features. As set forth in Amendment F, submitted on March 4, 2003, Nelles discloses a unitary shaft (ruhrerwelle) extending from near the bottom of the vessel to a coupling (kupplung) well outside the confines of the vessel. (Nelles, p. 715, Fig. 2). A stirring implement attaches to the lower end of the unitary shaft, exposing both the shaft and the stirring implement to the reactor contents. Moreover, it appears from the figures that the shaft of Nelles is metallic. Nelles' unitary shaft design fails to show or suggest a multi-piece spindle having both a **metal upper spindle portion** and a **plastic stirrer**. Finally, the coupling of Nelles also fails to provide adequate teaching of a coupling for releasably coupling a plastic stirrer to a metal upper spindle portion. In addition to the foregoing reasons set forth in Amendment F, Nelles also fails to disclose each of the elements of amended claim 163, in particular a **shaft having a plastic core**. A shaft having a

plastic core is of particular importance in the parallel reactor of claim 163 because each plastic stirrer is removable from its coupling after a mixing operation to permit replacement. Plastic core stirrers are less costly to manufacture, are lighter and may be formed from various plastic materials. Because of their low cost, replaceable plastic core stirrers eliminate the problems associated with cleaning stirrers and possible cross-test contamination. Steel and glass core shafts, which are more expensive and are typically not replaceable, do not offer these advantages.

None of the other references relied upon in the Office action discloses or suggests the non-obvious combination of features of claim 163. Lebl discloses no shaft having a plastic core, and Corkan merely discloses stir bars. Moreover, Salvat (a translation of which is included in the enclosed Fourth Supplemental IDS) does not show or suggest a shaft having a plastic core, nor a coupling for releasably coupling the plastic stirrer. Finally, as discussed above with respect to claim 171, Aldrich discloses no stir shafts having a plastic core. As a result, the cited references cannot render claim 163 obvious.

For these reasons, claim 163 is believed to be in condition for allowance. Claims 164-170, which depend directly or indirectly from claim 163, are submitted as patentable for the same reasons as claim 163.

### **Claim 166**

Reconsideration of the final rejection of claim 166 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich is respectfully requested.

Claim 166 discloses a quick-connect/disconnect element comprising a **circumferential groove around the shaft for receiving one or more detents in the coupling**. Claim 166 is clearly distinguished as patentable over the prior art of record, including Nelles, Lebl, Corkan, Salvat and Aldrich.

Nelles does not show or suggest a quick-connect/disconnect element for its unitary shaft (ruhrerwelle). Nelles discloses a coupling (Kupplung) in its figure, but the coupling does not appear to comprise a circumferential groove around the shaft for receiving one or more detents in the coupling. Lebl similarly fails to disclose a quick-connect/disconnect element, a circumferential groove around a shaft, or one or more detents in a coupling. Corkan discloses only stir bars and fails to disclose a quick-connect/disconnect element, a circumferential groove around a shaft, or one or more detents in a coupling. Salvat discloses a rotating shaft 6 having a mixer (not shown) placed on the shaft. However, Salvat fails to disclose a quick-

connect/disconnect element, a circumferential groove around the shaft (6), or one or more detents in a coupling. Finally, Aldrich discloses a "quick-disconnect chuck design," but fails to provide any details of the design. Moreover, Aldrich fails to disclose a circumferential groove in any shaft or a corresponding detent formed in any coupling. None of the other references of record provides further relevant teaching. As a result, the cited references do not render claim 166 obvious.

For these reasons, claim 166 is believed to be in condition for allowance.

### Claim 169

Reconsideration of the final rejection of claim 169 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich is respectfully requested.

Claim 169 discloses a parallel reactor having a drive mechanism comprising (i) **a gear train** for rotating each magnetic feed through device and (ii) **a motor for rotating gears of the gear train** to effect conjoint rotation of the multi-piece spindles at speeds up to 3000 rpm. None of the references, taken individually or in combination, discloses or suggests these novel elements.

None of the references discloses or suggests a gear train for rotating multiple magnetic feed through devices and a motor for rotating the gear train. Salvat discloses a shaft-stirred magnetic feed through device for stirring the contents of a vessel, but it does not disclose multiple devices connected by a gear train. Aldrich similarly fails to disclose a common gear train for rotating multiple shafts. Corkan discloses stir bar stirring with a fifteen-vessel solid-state stirring assembly 16A (Fig. 2), but fails to disclose a gear train for rotating each of the stir bars. Nelles discloses a single reactor and therefore has no need for such a gear train. Lebl includes multiple reaction vessels, but fails to disclose magnetic feed through devices for each vessel or a gear train connecting such devices. None of the other references of record provides further relevant teaching. As a result, the cited references do not render claim 169 obvious because they do not show or suggest a gear train.

For these reasons, claim 169 is believed to be in condition for allowance. Claim 170, which depends directly from claim 169, is submitted as patentable for the same reasons as claim 169.

### Claim 176

Reconsideration of the final rejection of claim 176 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich is respectfully requested.

Claim 176 defines an apparatus for the parallel processing of reactions mixtures. The apparatus comprises a **reactor block having a series of wells therein extending down from an upper surface of the block** for containing the reaction mixtures. In addition, **an upper plate is removably secured to the reactor block over the upper surface**. The **upper plate has openings therein in registry with the wells** in the reactor block. **Stirring mechanisms attach to the upper plate** for stirring the reaction mixtures.

During the conference with the Examiner noted above, the Examiner clarified that he regarded the rejection of claim 176 as primarily based upon Nelles in view of Corkan. Thus, the following discussion will focus on these references. Applicants assert that Nelles and the other references of record fail to disclose or suggest these novel features. Nelles discloses a single reactor with a rotating shaft and stirring implement. Nelles discloses a head (unnumbered) engaging a pressure liner (druckmantel), or reactor, apparently sealing the reactor. Nelles fails to disclose a reactor block with wells, and the head is not equivalent to the plate defined in claim 176, because it does not include openings therein in registry with multiple wells of a reactor block.

Turning to the teaching of Corkan, the Corkan automated chemistry workstation for parallel experimentation also fails to disclose a reactor block, a removable plate or stirring mechanisms as defined by claim 176. Corkan teaches parallelism, but applying this teaching to Nelles does not render claim 176 obvious. Nelles teaches a 1:1 ratio between the head and the reactor. If the Nelles reactor is multiplied according to the teaching of Corkan, the resultant apparatus would include multiple reactors with multiple heads, preserving the 1:1 ratio between the reactor head and the reactor. There is no teaching in Corkan or Nelles to combine multiple Nelles heads into a plate removably secured to a reactor block for changing the ratio between the number of heads and the number of reactors. As such, the combination of Corkan and Nelles cannot render claim 176 obvious.

None of the other references provides a teaching to combine multiple reactor heads into a plate removable from a reactor block. For example, Lebl discloses a microtitre block 110 with wells but fails to teach a removable plate. Salvat and Aldrich similarly provide no teaching of the claimed elements.

As a result, the art of record do not render claim 176 obvious. For at least these reasons, claim 176 is believed to be in condition for allowance.

#### **Claim 177**

Reconsideration of the final rejection of claim 177 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvet and Aldrich is respectfully requested.

Among other things, claim 177 requires (i) a reactor block having a series of wells, (ii) a removable plate removably secured to the reactor block, the removable plate having openings therein in registry with the wells in the reactor block and (iii) a stirring system attached to the removable plate and removable with the removable plate for agitating the reaction mixtures. These elements are substantially similar to those discussed above with respect to claim 176. As such, Applicants submit claim 177 is patentable for the same reasons as set forth above with respect to claim 176. For at least these reasons, claim 177 is believed to be in condition for allowance.

Claims 178, 207 and 208, which depend directly or indirectly from claim 177, are submitted as patentable for the same reasons as claim 177.

#### **Claim 179**

Reconsideration of the final rejection of claim 179 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvet and Aldrich is respectfully requested.

Among other things, amended claim 179 requires multi-piece spindles for stirring the reaction mixtures in the vessels. Each multi-piece spindle comprises a metal upper spindle portion, a plastic stirrer comprising a **shaft having a plastic core** and a plastic mixing blade on the shaft, and a coupling for releasably coupling the plastic stirrer to the metal upper spindle portion. These elements are substantially similar to those discussed above with respect to claim 163. As such, Applicants submit claim 179 is patentable for the same reasons as set forth above with respect to claim 163. For at least these reasons, claim 179 is believed to be in condition for allowance.

Claims 180-182, which depend directly or indirectly from claim 179, are submitted as patentable for the same reasons as claim 179.

#### Claim 181

Reconsideration of the final rejection of claim 181 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvet and Aldrich is respectfully requested.

Among other things, claim 181 requires a **gear train for rotating each magnetic feed through device**, and a **motor for rotating gears of the gear train** to effect rotation of the multi-piece spindles at speeds up to 3000 rpm. These elements are substantially similar to those discussed above with respect to claim 169. As such, Applicants submit claim 181 is patentable for the same reasons as set forth above with respect to claim 169. For at least these reasons, claim 181 is believed to be in condition for allowance.

Claim 182, which depends directly from claim 181, is submitted as patentable for the same reasons as claim 181.

#### Claim 183

Reconsideration of the final rejection of claim 183 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvet and Aldrich is respectfully requested.

Among other things, amended claim 183 requires plastic stirrers comprising a **shaft having a plastic core** and a plastic mixing blade on the shaft, and a coupling for releasably connecting each stirrer to a drive system. The elements of (i) a shaft having a plastic core and (ii) a plastic mixing blade on the shaft are identical to those discussed above with respect to claim 163. As such, Applicants submit claim 183 is patentable for the same reasons as set forth above with respect to claim 163. For at least these reasons, claim 183 is believed to be in condition for allowance.

Claims 184-192, 209 and 210, which depend directly or indirectly from claim 183, are submitted as patentable for the same reasons as claim 183.

#### Claim 186

Reconsideration of the final rejection of claim 186 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvet and Aldrich is respectfully requested.

Among other things, claim 186 recites quick-connect/disconnect elements, each comprising a circumferential groove around a shaft for receiving one or more detents in a coupling. These elements are identical to those discussed above with respect to claim 166. As such, Applicants submit claim 186 is patentable for the same reasons as set forth above with



respect to claim 166. For at least these reasons, claim 186 is believed to be in condition for allowance.

#### Claim 190

Reconsideration of the final rejection of claim 190 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich is respectfully requested.

Among other things, claim 190 requires a **gear train for rotating each magnetic feed through device**, and a **motor for rotating gears of the gear train** to effect rotation of the magnetic feed through devices and stirrers. The gear train and motor elements are substantially similar to those discussed above with respect to claim 169. As such, Applicants submit claim 190 is patentable for the same reasons as set forth above with respect to claim 169. For at least these reasons, claim 190 is believed to be in condition for allowance.

#### Claim 191

Reconsideration of the final rejection of claim 191 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich is respectfully requested.

Among other things, claim 191 requires a **gear train drivingly connected to each of said stirrers**, and a **motor for rotating gears of the gear train** to effect movement of the stirrers. The gear train and motor elements are substantially similar to those discussed above with respect to claim 169. As such, Applicants submit claim 191 is patentable for the same reasons as set forth above with respect to claim 169. For at least these reasons, claim 191 is believed to be in condition for allowance.

#### Claim 193

Reconsideration of the final rejection of claim 193 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich is respectfully requested.

Among other things, amended claim 193 recites plastic stirrers comprising a **shaft having a plastic core** and a plastic mixing blade on the shaft, and couplings for releasably connecting the plastic stirrers to a drive system. The elements of (i) a shaft having a plastic core and (ii) a plastic mixing blade on the shaft are identical to those discussed above with respect to claim 163. As such, Applicants submit claim 193 is patentable for the same reasons as set forth above with respect to claim 163. For at least these reasons, claim 193 is believed to be in condition for allowance.

Claims 194-196, which depend directly from claim 193, are submitted as patentable for the same reasons as claim 193.

#### **Claim 194**

Reconsideration of the final rejection of claim 194 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich is respectfully requested.

Among other things, claim 194 recites a quick-connect/disconnect element comprising a circumferential groove in a shaft adapted for receiving one or more detents in a coupling. The circumferential groove and one or more detent elements are substantially similar to those discussed above with respect to claim 166. As such, Applicants submit claim 194 is patentable for the same reasons as set forth above with respect to claim 166. For at least these reasons, claim 194 is believed to be in condition for allowance.

#### **Claim 197**

Reconsideration of the final rejection of claim 197 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich is respectfully requested.

Among other things, claim 197 requires (i) a reactor block having a series of wells, (ii) a removable plate removably secured to the reactor block, the removable plate having openings therein in registry with the wells in the reactor block, and (iii) a stirring system supported by the removable plate and removable with the removable plate for agitating the reaction mixtures. These elements are substantially similar to those discussed above with respect to claim 176. As such, Applicants submit claim 197 is patentable for the same reasons as set forth above with respect to claim 176. For at least these reasons, claim 197 is believed to be in condition for allowance.

Claims 198-205, which depend directly or indirectly from claim 197, are submitted as patentable for the same reasons as claim 197.

#### **Claim 198**

Reconsideration of the final rejection of claim 198 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich is respectfully requested.

Claim 198 recites a system wherein the drive mechanism comprises **a drive train** for driving the stirrers and (ii) **a motor for driving the drive train**. None of the references, taken individually or in combination, discloses or suggests these novel elements.

None of the references discloses or suggests a drive train for driving the stirrers and a motor for driving the drive train. Salvat discloses a shaft-stirred magnetic feed through device for stirring the contents of a vessel, but it does not disclose a drive mechanism comprising a drive train for moving the stirrers in the wells. Aldrich similarly fails to disclose multiple vessels having a drive mechanism comprising a drive train. Corkan discloses stir bar stirring with a fifteen-vessel solid-state stirring assembly 16A (Fig. 2), but fails to disclose a drive train for moving each of the stir bars. Nelles discloses a single reactor and therefore has no need for such a drive train. Lebl includes multiple reaction vessels, but fails to disclose a drive train for driving stirrers in respective vessels. None of the other references of record provides further relevant teaching. As a result, the cited references do not render claim 198 obvious because they do not show or suggest a drive train and a motor for driving the drive train.

For these reasons, claim 198 is believed to be in condition for allowance. Claim 199, which depends directly from claim 198, is submitted as patentable for the same reasons as claim 198.

#### **Claim 199**

Reconsideration of the final rejection of claim 199 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich is respectfully requested.

Claim 199 recites a system wherein a **drive train** comprises a **plurality of drive gears in mesh with one another** and a motor for driving said drive gears. None of the references, taken individually or in combination, discloses or suggests these novel elements.

As discussed above with respect to claim 198, none of the references discloses a drive train. In addition, none of the references discloses or suggests a drive train comprising a **plurality of drive gears in mesh with one another**. Salvat discloses a shaft-stirred magnetic feed through device, but discloses no meshing gears. Aldrich discloses motor-turned shafts, but discloses no meshing gears. Corkan teaches stir bar stirring, but discloses no meshing gears. Nelles discloses stirring, but discloses no meshing gears. Lebl includes multiple reaction vessels, but discloses no meshing gears. None of the other references of record provides further relevant teaching. As a result, the cited references do not render claim 199 obvious because they do not show or suggest a plurality of drive gears in mesh with one another. For at least these reasons, claim 199 is believed to be in condition for allowance.

### Claim 200

Reconsideration of the final rejection of claim 200 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich is respectfully requested.

Claim 200 recites a system wherein the drive mechanism comprises a plurality of **drive gears on the stirrers**, and one or more motors for driving the drive gears. None of the references, taken individually or in combination, discloses or suggests these novel elements.

As discussed above with respect to claim 199, none of the references discloses or suggests drive gears. In addition, none of the references discloses or suggests a plurality of **drive gears on the stirrers**, and one or more motors for driving the drive gears. Salvat discloses a shaft-stirred magnetic feed through device, but discloses no drive gears on the stirrers. Aldrich discloses motor-turned shafts, but discloses no drive gears on the stirrers. Corkan teaches stir bar stirring, but discloses no drive gears on the stirrers. Nelles discloses stirring, but discloses no drive gears on the stirrers. Lebl includes multiple reaction vessels, but discloses no drive gears on the stirrers. None of the other references of record provides further relevant teaching. As a result, the cited references do not render claim 200 obvious because they fail to show or suggest a plurality of drive gears on the stirrers.

For at least these reasons, claim 200 is believed to be in condition for allowance. Claim 201, which depends directly from claim 200, is submitted as patentable for the same reasons as claim 200.

### Claim 206

Reconsideration of the final rejection of claim 206 under 35 U.S.C. §103 as being unpatentable over Nelles in view of Lebl, Corkan, Salvat and Aldrich is respectfully requested.

Among other things, the combinatorial chemistry reactor system of claim 206 requires (i) a reactor block having a series of wells, (ii) an upper plate removably secured to the reactor block in face-to-face relation with said upper surface, the removable plate having openings therein in registry with the wells in the reactor block, and (iii) a stirring system supported by the removable plate and removable with the removable plate for agitating the reaction mixtures. These elements are substantially similar to those discussed above with respect to claim 176. As such, Applicants submit claim 206 is patentable for the same reasons as set forth above with respect to claim 176.

In addition, the combinatorial chemistry reactor system of claim 206 recites a drive mechanism comprising a drive train for driving the stirrers and one or more motors for driving

the drive train. The drive train is substantially similar to the drive train discussed above with respect to claim 198. As such, Applicants additionally submit claim 206 is patentable for the additional reasons as set forth above with respect to claim 198.

For at least these reasons, claim 206 is believed to be in condition for allowance.

**Non-Statutory Double Patenting Rejection**

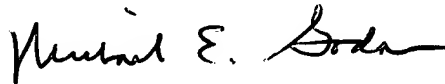
Enclosed herewith is a terminal disclaimer disclaiming the portion of any term beyond expiration of U.S. Patent No. 6,306,658, which was inadvertently not included in Applicants' previous response. Accordingly, withdrawal of this rejection is requested. Please charge the Terminal Disclaimer fee to Deposit Account No. 50-0496.

The Commissioner is hereby authorized to charge any under payment or credit any over payment to Deposit Account No. 50-0496.

**Conclusion**

In view of the foregoing, favorable reconsideration and allowance of this application is requested.

Respectfully submitted,



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